The Examiner made further objections to the drawings asserting that a feature recited in claims 9, 10, or 13 (pixel electrode being connected to a drain electrode) is not shown in the drawings. The applicant asserts that the claimed feature is shown in any one of Fig.3, reference numeral 44, Fig.4, reference numeral 48 or Fig.5, reference numeral 52.

Similarly, the drawings have been objected to because, claim 27, like claim 7, recites a source electrode part in the place where a storage electrode part should have been recited. Claim 27 has been amended to replace the recitation of a *source electrode part* with a *storage electrode part*. Claim 28, dependent on claim 27, now recites (by reference) the enabling features of claim 27. Accordingly, the applicant respectfully requests that the Examiner's objections to the drawings be withdrawn.

Rejections under 35 U.S.C. § 112

Claims 7-10 and 13

Claims 7-10 and 13 stand rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. This rejection is respectfully traversed.

The Examiner asserts that the specification does not disclose how a pixel

electrode is connected to both a source and drain electrode, and that such a connection would short circuit the source and drain electrodes. Claim 7 has been amended to replace the recitation of a *source electrode part* with a *storage electrode part*. Claims 8, 9, 10 and 13 depend (directly or indirectly) from claim 7, therefore are enabling at least for the reasons stated with respect to claim 7. Accordingly withdrawal of the rejection of claims 7-10 and 13 under 35 U.S.C. §112, first paragraph is respectfully requested.

Claims 27 and 28

Claims 27 and 28 stand rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicant respectfully traverses.

The Examiner asserts that the specification does not show how to perform "a protective layer step forming the protective layer with a first contact hole exposing the source electrode part of the metallic pattern." Claim 27 has been amended to recite a *storage electrode part*, and no longer a *source electrode part*. Claim 28, dependent on claim 27, is enabling at least for the reasons stated with respect to claim 28. Accordingly, applicant respectfully requests withdrawal of the rejection of claims 27 and 28 under 35 U.S.C. §112, first paragraph.

Claim Objections

Claims 11 and 14 are objected to under 37 CFR 1.75(c) as being of improper dependent form for failing to limit the subject matter of a previous claim. Particularly, the Examiner asserts that both claims 11 and 14 depend on rejected claims 7 and 13 in that the pixel electrode is connected to both source and drain electrode parts of the metallic pattern. This objection is respectfully traversed.

Claim 7 has been amended to replace the recitation of a *source electrode part* with *storage electrode part*. Claims 10, 13 and 14, dependent (directly or indirectly) on claim 7, are in proper dependent form at least for the reasons stated with respect to claim 7.

Rejections Under 35 U.S.C. § 102

Rejections Over Kim

Claims 1, 2, 6, 21, and 22 stand rejected under 35 U.S.C. §102(b) over U.S. Patent No. 5,767,926 to Kim et al. (Kim). This rejection is respectfully traversed.

The Examiner asserts that Kim discloses a metallic pattern 5b forming a drain electrode of the thin film transistor and storage electrode of the capacitor (see Kim, Figs. 11 and 12 and col. 28, lines 11-15).

Reference numeral 5b of Kim designates a source electrode (see Kim, col. 18, line 23). Reference numeral 10 repeatedly designates the first electrode of the

storage capacitors (see Kim, cols. 16, 17, and 18). Reference numeral 4 designates the pixel electrode, said pixel electrode forming the second electrode of the storage capacitor. Kim describes the formation of the storage capacitor as follows:

> At this time, each pixel electrode 4 is patterned to overlap the first electrode 10 of the storage capacitor formed in the foregoing step by a predetermined width, with the insulating layer 2 being interposed therebetween. A capacitor is formed between the first electrode 10 of the storage capacitor and the pixel electrode 4 on each pixel region by interposing the insulating layer 2 as a dielectric material therebetween, . . .

Kim, col. 18 at line 7

Reference numeral 5b of Kim, then, correctly designates a source electrode (not an electrode of a storage capacitor). Even if (for the sake of argument) reference numeral 5b of Kim designated a metallic pattern, the pattern does not have a drain electrode part and a storage electrode part. Therefore, Kim does not disclose a metallic pattern having a drain electrode of the thin film transistor and a storage electrode of the storage capacitor, and being electrically connected to the pixel electrode as recited in independent claim 1 (as amended) and similarly stated in independent claim 21.

Claims 2, 6, 21 and 22, dependent on claim 1 or claim 21, are patentable at least for the reasons stated with respect to claims 1 and 21. Withdrawal of this art grounds of rejection is respectfully requested.

Rejections Over Shin

Claims 23-25 and 29-31 stand rejected under 35 U.S.C. §102(b) over U.S. Patent No. 5,737,049 to Shin et al. (Shin). This rejection is respectfully traversed.

Shin discloses a first capacitor electrode designated by reference numeral 20 (see Shin, col. 4, line 67). The storage electrode (second capacitor electrode) is designated by reference numeral 33-1 in combination with reference numeral 27' (see Shin, col.6 lines 60-65).

Drain electrode 30 of Shin, designated by the Examiner as a "metallic pattern", is not formed with a storage electrode part.

Therefore Shin does not disclose a metallic pattern having a drain electrode part and a storage electrode part as recited in independent claim 23 (as amended).

Claims 24, 25 and 29-31, dependent on claim 23, are patentable at least for the reasons stated with respect to claim 23. Withdrawal of this art grounds of rejection is respectfully requested.

Rejections Under 35 U.S.C. § 103

Kim in View of Bae

Claims 3, 4 and 16-19 stand rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,767,926 to Kim et al. (Kim) in view of U.S. Patent No. 5,742,363 to Bae. This rejection is respectfully traversed.

Bae discloses patterning a metal layer to form source and drain electrodes connected to the source and drain regions through a contact hole, and to form an

upper storage electrode.

Bae, like Kim (argued above), however, does not disclose or a metallic pattern having a drain electrode of the thin film transistor and a storage electrode of the storage capacitor, and being electrically connected to the pixel electrode as recited in independent claim 1 (as amended). Accordingly, even if these references are combined as suggested by the Examiner, this combination would not fill these deficiencies.

Claims 3, 4 and 16-19 depend (either directly or indirectly) from independent claim 1. Therefore Kim, in view of Bae, cannot render claims 3, 4 and 16-19 obvious to one of ordinary skill in the art. Withdrawal of this art grounds of rejection is respectfully requested.

Shin in View of Morimoto

Claims 7, 8, 27 and 28 stand rejected under 35 U.S.C. 103(a) over Shin in view of U.S. Patent No. 6,165,810A to Morimoto.

Morimoto discloses a second contact hole (43) formed through the acrylic resin layer, or the planar film, to make contact with the source electrodes (41s). Further, a pixel electrode (44) connected to the source electrode 41s is formed so as to expand over the acrylic resin layer via the second contact hole 43.

Morimoto, like Shin (argued above) does not however, disclose or suggest a metallic pattern having a drain electrode part and a storage electrode part as

recited in independent claim 23 (as amended).

Claims 27 and 28 depend from independent claim 23. Therefore Shin, in view of Morimoto, cannot render claims 27 and 28 obvious to one of ordinary skill in the art.

Neither does Morimoto or Shin disclose or suggest a metallic pattern having a drain electrode of the thin film transistor and a storage electrode of the storage capacitor, and being electrically connected to the pixel electrode as recited in independent claim 1.

Claims 7 and 8 depend from independent claim 1. Therefore, Shin, in view of Morimoto, cannot render claims 7 and 8 obvious to one of ordinary skill in the art. Accordingly, withdrawal of this art grounds of rejection is respectfully requested.

CONCLUSION

Applicant points out that all of the Examiner's comments have been addressed and that all of the Examiner's objections and rejections have been overcome, thereby placing all claims pending in the present Application in condition for allowance. Allowance of the claims is respectfully solicited.

In the event that any outstanding matters remain in this application, Applicant requests that the Examiner contact the undersigned at (703) 205-8000 to discuss such matters.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant respectfully petitions for a one (1) month extension of time for filing a response in connection with the present application and the required fee of $110 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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2658-0190P

Attachment: Version with Markings to Show Changes Made

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

The claims have been amended as follows:

1. (Amended) A liquid crystal device having a thin film transistor [substrate], comprising:

a plurality of gate lines formed on a substrate;

a plurality of data lines insulated from and intersecting said gate lines, said data lines and intersecting gate lines defining a plurality of cells, at least one cell including,

a pixel electrode,

a thin film transistor connected to one of the data lines and one of the gate lines defining the cell,

a storage capacitor, and

a metallic pattern having [forming] a drain electrode of the thin film transistor and a storage electrode of the storage capacitor, and being electrically connected to the pixel electrode.

2. (Amended) The liquid crystal device [substrate] of claim 1, wherein the metallic pattern is spaced a predetermined distance from the data line connected to the thin film transistor.

3. (Amended) The liquid crystal device [substrate] of claim 2, further comprising:

a protective layer disposed between the pixel electrode and the metallic pattern, and wherein

a portion of a periphery of the pixel electrode overlaps the metallic pattern.

4. (Amended) The liquid crystal device [substrate] of claim 1, further comprising:

a protective layer disposed between the pixel electrode and the metallic pattern, and wherein

a portion of a periphery of the pixel electrode overlaps the metallic pattern.

5. (Amended) The liquid crystal device [substrate] of claim 4, wherein

the metallic pattern has an annular shape, and

an entire periphery of the pixel electrode overlaps the metallic pattern.

6. (Amended) The liquid crystal device [substrate] of claim 5, wherein the metallic pattern is spaced a predetermined distance from the data line connected to the thin film transistor.

7. (Amended) The substrate of claim 1, further comprising:

a protective layer disposed between the pixel electrode and the metallic pattern, and wherein

the pixel electrode is connected to a [source] storage electrode part of the metallic pattern via a first contact hole in the protective layer.

8. (Amended) The liquid crystal device [substrate] of claim 7, wherein the protective layer does not include a contact hole over a drain electrode part of the metallic pattern.

9. (Amended) The liquid crystal device [substrate] of claim 8, wherein the drain electrode part has a smaller area than if the drain electrode part was electrically connected to the pixel electrode via a contact hole in the protective layer over the drain electrode part.

10. (Amended) The liquid crystal device [substrate] of claim 8, wherein the pixel electrode has a larger aspect ratio than if the drain electrode part was

electrically connected to the pixel electrode via a contact hole in the protective layer over the drain electrode part.

11. (Amended) The liquid crystal device [substrate] of claim 8, wherein the metallic pattern is spaced a predetermined distance from the data line connected to the thin film transistor; and

a portion of a periphery of the pixel electrode overlaps the metallic pattern.

12. (Amended) The liquid crystal device [substrate] of claim 8, wherein the metallic pattern has an annular shape and is spaced a predetermined distance from the data line connected to the thin film transistor; and

an entire periphery of the pixel electrode overlaps the metallic pattern.

13. (Amended) The liquid crystal device [substrate] of claim 7, wherein the pixel electrode is connected to a drain electrode part of the metallic pattern via a second contact hole in the protective layer.

14. (Amended) The liquid crystal device [substrate] of claim 13, wherein

the metallic pattern is spaced a predetermined distance from the data line connected to the thin film transistor; and

a portion of a periphery of the pixel electrode overlaps the metallic pattern.

15. (Amended) The liquid crystal device [substrate] of claim 13, wherein

the metallic pattern has an annular shape and is spaced a predetermined distance from the data line connected to the thin film transistor; and

an entire periphery of the pixel electrode overlaps the metallic pattern.

16. (Amended) The liquid crystal device [substrate] of claim 1, further comprising:

a protective layer disposed between the pixel electrode and the metallic pattern, and wherein

the pixel electrode is connected to a drain electrode part of the metallic pattern via a contact hole in the protective layer.

17. (Amended) The liquid crystal device [substrate] of claim 16, wherein the protective layer does not include a contact hole over a [source] storage electrode part of the metallic pattern.

18. (Amended) The liquid crystal device [substrate] of claim 17, wherein the pixel electrode overlaps a gate line, defining the cell but not connected to the thin film transistor, less than if the protective layer included a contact hole over a storage electrode part of the metallic pattern.

19. (Amended) The liquid crystal device [substrate] of claim 17, wherein

the metallic pattern is spaced a predetermined distance from the data line connected to the thin film transistor; and

a portion of a periphery of the pixel electrode overlaps the metallic pattern.

20. (Amended) The liquid crystal device [substrate] of claim 16, wherein

the metallic pattern has an annular shape and is spaced a predetermined distance from the data line connected to the thin film transistor; and

an entire periphery of the pixel electrode overlaps the metallic pattern.

21. (Amended) A liquid crystal device having a thin film transistor [substrate], comprising:

a plurality of gate lines formed on a substrate;

a plurality of data lines insulated from and intersecting said gate lines, said data lines and intersecting gate lines defining a plurality of cells, at least one cell including,

a pixel electrode,

a thin film transistor selectively electrically connecting one of the data lines to the pixel electrode, and including a source electrode connected to the one of the data lines, a gate electrode connected to one of the gate lines, and a drain electrode, and

a storage capacitor having a storage electrode and a [electrically connected to the] drain electrode, and being connected to [and] the pixel electrode.

22. (Amended) The liquid crystal device [substrate] of claim 21, [further comprising:

a metallic pattern connecting] wherein the storage electrode and the drain electrode are connected to each other by a metallic pattern.

23. (Amended) A method of manufacturing a thin film transistor substrate, comprising:

forming a [plurality] gate line[s] having a [with] gate electrode[s] [extending therefrom] on a transparent substrate;

forming a gate insulating layer on [over] the gate electrode [substrate];

forming a [plurality of data lines intersecting with] semiconductor layer on the gate insulating layer [lines over the substrate, the data lines including source electrodes extending therefrom];

forming a data line [metallic pattern] having a [drain] source electrode, [part] and a metallic pattern having a [source] drain electrode part[,] [the source] and a storage electrode part [formed overlapping with one of the gate lines];

forming a semiconductor layer over at least a portion of one of the gate electrodes, at least a portion of one of the source electrode, and at least a portion of the drain electrode part;

forming a protective film over the entire surface [substrate, the protective film including a contact hole exposing a portion of the metallic pattern]; and

forming a pixel electrode over the protective film [and in electrical contact with the metallic pattern via the contact hole].

24. (Amended) The method of claim 23, wherein the forming [a plurality of] the data line[s] [step] and the [forming a] metallic pattern step [are] is performed simultaneously by forming a conductive layer over the substrate and patterning the conductive layer to form the data line[s] and the metallic pattern such that the metallic pattern is spaced a predetermined distance from [one of] the data line[s].

27. (Amended) The method of claim 23, wherein the forming a protective layer step forms the protective layer with a first contact hole exposing the [source] storage electrode part of the metallic pattern.

31. (Amended) The method of claim 30, wherein the forming a protective layer step does not form the protective layer with a contact hole exposing the [source] storage electrode part of the metallic pattern.